at the Los Angeles General Hospital may be of interest. In every case a history of close contact with a case previously stricken could be secured. The average duration of the illness before admission to the hospital was between three and four days. The average length of hospital treatment was less than two days, but one case was proven plague at autopsy after twelve days of hospitalization.

The chief symptoms complained of, in the order of frequency of occurrence, were fever, ranging from 100 to 106 degrees on admission, expectoration with blood-stained sputum, cough, pain in the chest, headache, generalized pains, vomiting, pain in the back and upper abdomen, malaise, epistaxis and chilliness without rigor. The main findings on physical examination, in the order of frequency, were large, coarse rales in the chest, thickly coated tongue, reddened throat, dyspnoea, impairment of percussion note over the chest, restlessness, prostration, delirium, weak rapid pulse, cyanosis, a systolic murmur, localized adenopathy, conjunctival injection, increase in spinal fluid pressure, with signs of meningismus in the children, jaundice and a macular rash.

Unfortunately, only nine of the bodies were autopsied before cremation, all of whom showed typical findings of a confluent bronchopneumonia in widely varying degrees, with the signs of a very severe infection, and the recovery of the bacillus of plague from the lungs and other organs, as proven by guinea pig inoculation. Blood cultures from nine other patients, however, also yielded this organism. In the remaining cases no bacteriological studies were made, but the clinical history and course of the disease, as well as the evidence of transmission through them to other patients, leaves no doubt as to the diagnosis. Smears from the sputa in a number of instances showed Gram-negative bipolar staining bacilli, with comparatively few pus cells.

In addition to repeated stimulation and other symptomatic treatment which all of the patients received, more than half of them received intravenous (or intraperitoneal) injections of mercurochrome, including the nurse and the boy who still survive, but fresh anti-plague serum was secured only in time to be used in one case. Since no new cases of pneumonic plague have developed for four weeks, it is believed that the epidemic is over, though sporadic cases of the bubonic type may still be expected to appear occasionally.

What's in a Name—Occupational therapy is now a classical remedy for ennui. It used to be called "work." The new name makes it more effective. An unfriendly dame suggests the installation of an old-time tread mill in every home as an economic proposition. It would serve both as a domestic power plant and an efficient substitute for cow pasture pool.—Kansas Medical Journal.

As an Editor Sees It—"Doctors who specialize are valuable. They push the science ahead. They do things that non-specialists could not do. But progress in one direction is paid for by loss in another. We are losing the first-rate all-around general physician and consultant. Properly speaking, the specialist should only be an assistant to the general physician, called upon when required."

ADENOMA OF THE THYROID *

By VINTON A. MULLER, M. D., *Reno, Nevada.*

A clinical study for clinicians.

The treatment of adenomas is surgical. Iodine is contra-indicated.

The use of the x-rays in this type of goitre is to be condemned.

DISCUSSION *by W. W. Washburn, San Francisco; M. R. Walker, Reno, Nevada; Raymond St. Clair, Oakland; Thomas Wilbur Bath, Reno, Nevada.*

THE adenomatous goitre, which is the most common type of goitre, produces thyroid enlargement by the growth within the substance of the thyroid gland of encapsulated adenomas, which may be either single or multiple, and which give rise to the condition frequently spoken of as nodular goitre. The true etiology is as yet unknown, though it is quite commonly believed that some of these adenomas take their origin in cases of long standing colloid goitre, whereas others are believed to develop from foetal rests.

Adenoma of the thyroid ordinarily makes its appearance between the ages of 15 and 20, although some of these growths are first noted later on in life. The average age of first appearance is 22. Clinically, it is characterized by an asymmetrical or nodular enlargement of the thyroid gland caused by the presence of single or multiple growths, which may be confined to one lobe, both lobes, or any portion of the gland. At times these goitres may be retrosternal and not particularly visible in the neck or, in addition to the enlargement in the neck, one may find that one or more of the adenomatous masses descend behind the sternum and into the mediastinum. Asymmetry, though usually present, may not be marked, and occasionally only the most careful palpation will reveal the presence of a tumor mass or multiple masses within the gland. To the palpating finger the consistency of an adenoma is usually harder than normal thyroid tissue, but where degeneration has taken place the consistency may vary from the fluid of cyst formation to the hardness of calcareous deposits. Degenerative changes are prone to occur and are usually the result of hemorrhages within the capsule of the adenoma, and give rise to the various clinical varieties, such as hemorrhagic goiter, cystic goitre, calcareous goitre, etc. Myxomatous and hyaline changes also occur. In case of sudden enlargement, one must always think of hemorrhage; in case of rapid growth, malignancy.

In the early stages of their development these goitres do not produce symptoms except when their location is adjacent to an important structure whereupon pressure symptoms may develop. These pressure symptoms will depend upon what structure is involved, and are commonly manifested by difficulty in breathing or swallowing. Large retrosternal growths may interfere with circulation, produce a caput medusa or other signs of mediastinal obstruction.

About sixteen years after the appearance of the adenoma within the thyroid symptoms of hyperthyroidism may develop. The average age of appearance of these symptoms is thirty-six and one-half

* Presented before the Twenty-first Annual Meeting of the Nevada State Medical Association.

years, though at times young patients twenty-eight and thirty will come in mildly toxic. The cause of this hyperthyroidism is due to the secretion of normal, or nearly normal, thyroid hormone in excessive amounts by the adenoma. In 1916, Goetsch believed that the mitochondria in the adenomas were increased when hyperthyroidism was present, and offered this as a means of differentiating pathologically between adenomas with and those without hyperthyroidism, but his work has not been confirmed. In 1920, Boothby stated that, pathologically, there was no difference between an adenoma with and one without hyperthyroidism. In 1922, Wilson found that in the adenomas with hyperthyroidism there was evidence of increased activity of the parenchymal cells, which was indicated by moderate degrees of cell hypertrophy and hyperplasia which was not present in adenomas without hyperthyroidism. He concludes that the symptoms of hyperthyroidism occurring in these adenomatous glands are caused by the absorption of complete thyroxin in previously stored colloid, which is being manufactured more rapidly than in a normal gland, but much more slowly than in the gland of exophthalmic goitre.

These symptoms of hyperthyroidism are evidenced by nervousness, tremor, tachycardia, loss in strength and weight, with a tendency to hypertension and, in the later stages, myocardial degeneration. This type of goitre has a more pronounced selection for the cardiovascular system than exophthalmic goitre, and the changes produced are gradual, progressive, and certain. These patients appear for examination on an average of nineteen years after the first appearance of the goitre, and three years after the onset of their symptoms of intoxication. Nervousness and tremor are always present, but to a less degree than in exophthalmic goitre, whereas the cardiovascular symptoms are more pronounced; and it is not especially infrequent to see patients with oedema of the feet and ankles with all the symptoms and signs of cardiac decompensation who have been treated for cardiac decompensation "and the small, nodular goitre, which has been there for years without causing any trouble," overlooked. The tendency to hypertension is greater than in Grave's disease. Both systolic and diastolic pressures are greater than in Grave's disease, and this is true both for office readings and bedside readings, although in my own personal experience cases of Grave's disease seem to have higher systolic pressures than toxic adenomas. The basal metabolic rate is increased in the toxic adenomas, but this increase is to a less degree than in Grave's disease. The average B. M. R. in 201 cases studied by Boothby was plus 28.

The treatment of adenomas is surgical. Iodine is contra-indicated. Its use exerts no influence in causing the adenoma to disappear, but, to the contrary, it may cause symptoms of hyperthyroidism to develop; a condition which was often called by our predecessors "iodine heart."

The use of the x-rays in this type of goitre is to be condemned. They do not relieve the patient of her adenoma, but may relieve her of what normal thyroid tissue she has left and thus give rise to symptoms of hypothyroidism. The adenomas often crowd out and obliterate the normal thyroid tissue until there remains only a thin layer of it adhering to the capsule of the gland which might be just enough to care for the patient's needs after her adenoma is removed. In some of the adenomatous goitres that appear diffusely enlarged, an x-ray treatment will cause the adenomatous nodules to become apparent by its selective action on the extra adenomatous tissue.

Cleaning up of foci of infection seems to have a beneficial influence in Grave's disease, but will not exert any effect in causing an adenoma to disappear.

To remove the adenoma surgically is to remove abnormal thyroid tissue, which, by its presence, produces all of the patient's symptoms. Its surgical removal will put a stop to the disease, but whatever permanent damage to vital organs has occurred will always remain. Even the extreme cases, however, will show some improvement after operation. Removal of the goitre before symptoms arise preclude their possibility; removal after they appear, arrests the disease, prevents further degeneration and allows for some recuperation. The B. M. R. returns to normal limits within two weeks following removal of the adenoma. In contra-distinction to Grave's disease, these patients do not require the pre-operative preparation that those suffering with Grave's disease do—the advanced cases with myocarditis, auricular fibrillation and hypertension, naturally require pre-operative rest in bed and digitalis, until such time that they may be able to withstand thyroidectomy. Preliminary ligations are never done. It is essential that we recognize adenoma of the thyroid and remove them surgically before permanent damage to vital organs takes place. It is not good judgment, however, to advise surgery in young people from 15 to 25 years of age without symptoms, on account of the possibility of new adenomas developing after operation or very small ones being overlooked at the time of operation, to subsequently grow and give trouble. A frequent site of such "recurrences" is the pyramidal lobe, and for this reason it should be removed at operation, providing there is enough normal thyroid left without it.

A further, but also important, reason for advising surgical removal of adenomata of the thyroid gland is that 95 per cent of cases of carcinoma of the thyroid occur in glands with pre-existing adenomas, and, although carcinoma of the thyroid gland is rare, we can readily see that it may be made rarer by curing our patients of adenoma.

Gray-Reid Building.

DISCUSSION

W. W. WASHBURN, M. D. (380 Post Street, San Francisco)—I am glad that Dr. Muller has chosen to speak upon a distinct type of goitre rather than attempting to cover a large field. He is to be commended for this excellent paper, treating with adenoma of the thyroid.

The importance of first establishing an accurate diagnosis cannot be too strongly emphasized, for upon the diagnosis depends proper treatment. We still continue to see altogether too many goitres treated in a sort of "routine" manner. If iodine doesn't help, X-ray is tried, and when medical measures fail some of these patients are told that nothing more can be done except a "dangerous" operation. And, too often, I am sorry to say, the general practitioner attempts treatment of these too long, before referring them to one familiar with goitre problems. One still continues to see a great many adenomas of the thyroid treated along medical lines, especially the x-ray. This is because either an accurate diagnosis has not been

made, or else the physician is not aware that adenomas are neither cured nor benefited by x-ray therapy.

When seeing a young woman in the second decade of life presenting definite adenomas of the thyroid and symptoms of hyperthyroidism, before attributing this hyperthyroidism to an overfunctioning adenoma, one should suspect an associated hyperplasia in the remaining gland, as ordinarily the adenoma does not put out increased amounts of thyroxin until it has existed a number of years. True exophthalmos does not occur with toxic adenoma, and when present means a hyperplasia. A definite bruit heard over the thyroid gland proper, especially in the upper poles, is pathognomonic of hyperplasia. Toxic and non-toxic adenomas do not give a bruit upon auscultation, nor a thrill upon palpation.

The importance of exposing the entire gland at operation and palpating same cannot be too strongly emphasized. The full Kocher collar incision should be used in all cases, particularly when operating for adenomata. Recurrences after operation are generally due to overlooking small adenomas at the time of operation.

In reference to pressure symptoms from adenoma, I wish to call attention to the fact that we should not overlook some of the pressure signs. Chief among these is unilateral laryngeal palsy, which may have come on so gradually as not to have caused distinct voice defects, due to compensatory reaction of the opposite vocal chord. A pre-operative laryngoscopic examination will readily disclose the presence of such conditions, and relieve one of the embarrassment of having a voiceless patient, in case the opposite laryngeal nerve is accidentally injured in the course of operation.

As pointed out by Dr. Muller, why not operate upon these patients in the earlier stages, when the operative mortality is practically nil, rather than wait until they become poor surgical risks, due to a badly damaged myocardium?

M. R. WALKER, M. D. (Gray-Reid Building, Reno, Nev.)—We all enjoyed this paper; it is brief and to the point. In our state, goitre is very common; apparently, at least, on the increase, although we have no reliable statistics to refer to. Diagnosis is not always easy, yet absolutely essential, if we expect to benefit our patients with any line of therapy.

While there is no question that surgery is the choice, there are numerous patients that, for one reason or another, will not submit to an operation. With such I have found that radiation will give at least symptomatic relief; especially is this true for relief from toxicosis.

Again, I observe that operation is by no means always satisfactory. I have recently had two patients who are now regretting that they submitted to an operation; one of them, within forty-eight hours after the operation, developed severe tetany. It is now over two years and no indications that we may stop treatments for tetany. This operation was performed by an able surgeon. The other patient has become asthenic and has developed a marked irritability of the heart, and, in spite of all I have been able to do, she has not regained sufficient strength to do her housework with any comfort—only two in the family at that. I have found that often the giving of thyroid or parathyroid is of advantage.

I feel that we should urge prophylactic measures more strenuously than we are in the habit of doing.

RAYMOND ST. CLAIR, M. D. (Medical Building, Oakland, Calif.)—Dr. Muller is to be congratulated on his paper.

In the simple adenomatous goitre, it has been my experience that the diagnosis is comparatively easy. It is in the mixed type that we have difficulty in arriving at the right diagnosis. I believe that in the majority of colloid goitres small adenomas are present in the gland. These on account of absence of symptoms are overlooked in the histories. In many of my patients who have come to me with adenomatous goitre with hyperthyroidism, I obtained a history of greater enlargement of the gland in the first years of their disease. In my experience the adenomatous type of goitre is not overlooked as often as the exophthalmic type, as many doctors who served in the late war will bear witness. In our organization there were three doctors who were suffering with exophthalmic goitre who had not previously been diagnosed.

I quite agree with Dr. Muller that surgical treatment, if done properly, is the one indicated in adenomatous goitre, and if done early, soon after the toxic symptoms are noted, before permanent damage has occurred, one's results are practically 100 per cent cure. There has been a great deal learned about treatment of goitre in the past fifteen years, and our results are much better now than at that time.

The pre-operative care of the patient suffering with adenomatous goitre with hyperthyroidism is extremely important. It is my practice to get patients in the best possible condition for the operation, which is similar to the preparation in exophthalmic goitre; that is, rest in bed, good nutritious food, and a competent, quiet nurse, and digitalization. In the extremely bad cases I use the Crile method, with which you are all familiar. I can recall at least two or three patients with extremely bad symptoms in which this method was entirely successful.

It is not necessary to say very much regarding the post-operative treatment in simple adenomatous goitre patients who have suffered but a short time from hyperthyroidism, as they usually regain normalcy very quickly; but in those patients who have suffered permanent injury to their heart, kidneys, etc., it is necessary to keep them under observation for a longer period of time.

In patients who have come to me after having received x-ray treatment I have found difficulty in operating, on account of adhesions about the capsule. In some instances the patients have claimed that their symptoms had increased following its use. I am not prepared to say whether there is or is not a possibility of destruction of the small amount of normal gland which we find in these long-standing cases of adenomatous goitres producing a hypothyroidism, which is not a pleasant thing to have.

THOMAS WILBUR BATH, M.D. (Reno, Nev.)—It is always a privilege to listen to a discussion which affects public welfare. Formerly, appendicitis was discussed at nearly every medical meeting. Result: Today, most of the intelligent layity believe that the best place for a troublesome appendix is in the pickle-jar of the pathologist. Likewise, the public is becoming educated on such subjects as cancer, focal infections, and the better care of women in childbirth. Just now our efforts are directed along the line of goitre. Continuous discussion will increase our knowledge. For, as it has been well said, in a multitude of counsel there is wisdom.

Medical surveys that have been made in the United States and abroad have been illuminating, in that we have learned more concerning past geologic conditions, community inbreeding and localization of areas where goitre is endemic.

It is well to begin with a clear definition of the term goitre. Goitre means a diseased thyroid gland. There are many types of disease of this gland, but in the subject under discussion, as is well pointed out by Dr. Muller, the adenomatous is the most common of all. Just how many people in the United States have goitre we cannot say. But it is safe to assume that the number must be up in the tens of thousands. Every goitrous person is likely to become, unless aided, a serious deviation from normalcy. Why the disease is more preponderating among women we cannot say, unless it is the incidence of sex. There is an old saying in England concerning the child-bearing woman, that for every child she loses a tooth. That we would term a sex incidence. To the sex incidence we might ascribe the invasion of infection in women, which accounts for them having the first honors in goitres and bad gall-bladders.

In this connection, also considering the more underlying causes of goitre such as the deiodinization of endemic areas, we must always bear in mind the aggravating effects of such focal infections as bad teeth and tonsils. And especially that type of the shining sepulchre of bad dentistry known as the gold crown. The gold crown truly covers a multitude of evils. The constant drainage from the mouth into the cervical areas directly or indirectly affects the lymphatics of the thyroid, greatly contributing to heighten the pathology of the gland.

I think it will bear investigation that another contributing cause of enhancing goitrous conditions is child-bearing. Every wife is a possible mother. Parturition increases every normal function, and likewise sets in motion any abnormalcy. Repeated child-bearing will eventually wreck the frail life bark of the goitrous woman, and she will be lost upon the rocks of a destructive pathology. To her husband and friends who fail to correctly inter-

pret her condition, she is a neurotic; and she receives no sympathy because of her peculiar actions, when in reality the poor woman is traveling that vague borderland where illusions are real and distress is actual.

In summing up the treatment for this condition, as was well said by some of my confreres, the only treatment is surgical. The technique for this operation is now standardized. The mortality is much less than in appendectomies. The results, in the main, are quick and gratifying. Other therapy has been proved a failure. When the thyroid has become adenomatous, nature displays for common gaze her danger signal so that he who runs may read. And the interpretation thereof is removal.

DOCTOR MULLER (closing) — I shall endeavor to make my closing remarks brief, and will dwell only on a few of the points brought out in the discussion. One of the most important things, I believe, is the laryngoscopic examination, as mentioned by Doctor Washburn. In fact, this is of sufficient importance that it should be recommended as a routine procedure in the examination of all patients with adenoma.

The question of radiotherapy being contra-indicated in adenoma of the thyroid has been generally agreed upon. In those patients wherein relief has been afforded by this method of treatment, I would be inclined to believe that the symptoms of hyperthyroidism had come from an associated hyperplasia rather than from an overactive adenoma. It is a well-known fact that radiotherapy may exert a beneficial influence in toxic hyperplastic goitre.

Occasionally one does see poor results following surgery, but these instances are today so rare that they should not in any way influence the practitioner against advising surgery. If the adenoma is broken into and only partly removed, or if adenomata are overlooked and left in the gland to give rise to subsequent "recurrences," the result of operation will not be satisfactory. If all, or nearly all, of the normal thyroid tissue is removed with the adenoma, the characteristic symptoms of hypothyroidism will follow. Where we have large adenomata there is often very little normal thyroid tissue present. The adenoma is always encapsulated, and in operating one should exercise care to remove it wholly and intact with its capsule, but care should also be exercised to prevent the injury or removal of normal thyroid tissue. In those cases with small adenomata there may be quite an abundance of normal thyroid present, and this danger, therefore, becomes less. Injury to the recurrent laryngeal nerves and parathyroid bodies should not occur if one keeps within the capsule of the thyroid gland posteriorly, as these structures lie posterior to the capsule. Removal of the parathyroids or destruction of their blood supply which comes from the inferior thyroid arteries will result in tetany. Where tetany occurs, 10 cc. of a 5 per cent solution of calcium lactate in 100 cc. of normal saline should be given intravenously at once.

It is generally believed that focal infection or childbearing does not play any part in the etiology of adenoma of the thyroid gland. However, they are very important factors in some of the other types of goitre with which this paper does not deal. The foetal adenomata undoubtedly arise from Wolfler's rests, which are laid down in intrauterine life, whereas the adult type most probably arise from cases of long-standing colloid goitre. Although it is always desirable to clean up foci of infection, one should not expect to see any change in his cases of adenoma following this means of treatment.

"A matter that is neglected to a very large extent by all our medical associations and our medical colleges is that of ethics. We need more preaching and more influence that will bring about right thinking in the practice of medicine. We are altogether too prone to overlook breaches of ethics and propriety on the part of some of our members; and bad conduct on the part of a few reflects on the whole medical profession. Oftentimes unethical conduct is due to ignorance. Our colleges, societies, and journals devoted to medical practice," says A. E. Bulson (Bulletin A. M. A.), "should emphasize the importance of adhering to the code of ethics as laid down and accepted by the American Medical Association."

SURGICAL TREATMENT OF CHRONIC PEPTIC ULCER

By J. H. BREYER, M. D., *Pasadena*

Review of recent literature.

An attempt to determine the relative value of medical and surgical treatment.

Many ulcers heal without any treatment.

Recent ulcers should be treated medically; all other types should be given the benefit of thorough medical treatment until cure or chronicity is established.

After failure of medical treatment, surgical interference should be resorted to without further delay.

After convalescing from operation, patient should be turned over to physician for management.

Successful treatment of peptic ulcer requires combined judgment of the physician and the surgeon.

DISCUSSION *by Walter B. Coffey, San Francisco; Frederick A. Speik, Los Angeles.*

THERE is still wide difference of opinion between some physicians and surgeons, as to the value of surgical treatment in peptic ulcer. Much of the older literature written has become obsolete. A review of the more recent literature may help us to arrive at some definite conclusions. From it and my own experiences I shall attempt to determine the relative value of medical and surgical treatment, and the indications for each.

Our knowledge of ulcer has been greatly increased in the past ten years by the study of living pathology in the operating-room and by developments in the radiology. Autopsy studies have revealed that many peptic ulcers heal without any treatment whatsoever. Experimental ulcers in animals usually heal very promptly, in spite of the presence of one or more producing causes. Why some ulcers become chronic in man is still not definitely understood. The following explanations perhaps carry us as far as any toward the solution of the problem.

When the gastric or duodenal mucosa, lowered in vitality from any cause, is exposed to the digestive action of gastric juice the surface becomes eroded. The degree of erosion depends on the vitality of the mucosa and upon the general powers of resistance of the individual. The lowered local resistance may be due to some circulatory disturbance of the gastric or duodenal mucous membrane, to a trauma, or to a general or local infection. The lowered general resistance of the patient may be due to anemia, poor nutrition, or to some nerve strain, such as worry, that may influence the high acid content of the gastric juice and thereby be a factor in producing pylorospasm. The eroding action of gastric juice is nil in the absence of hydrochloric acid, but the mere lowering of the hydrochloric acid content does not diminish the peptic activity of the gastric juice. When the stomach does not empty itself in normal time, we have a prolonged contact of the acid gastric juice with the eroded area, as well as the irritating action of decomposing gastric contents. A true vicious circle is often established, the ulcer maintaining all the conditions that caused it.

The following conditions have a natural bearing on the history of an ulcer. Rebellious chronic ulcers are more frequent in males than in females. In young subjects there is less tendency for the ulcer to become chronic; in older individuals the reverse is true. The location of the ulcer has a distinct bear-